



PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) DEVICE FOR USE IN APPARATUS FOR TAKING UP AND DISCHARGING MULTIPLE LIQUID DOSES

(71) We, OLLITUOTE OY, a Finnish Company, of 9 Sahaajankatu, Helsinki 82, Finland, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns a device for use in apparatus for taking up and discharging multiple liquid doses and/or performing multiple sampling.

It is a frequently recurring task, in laboratories, to take up, for the purpose of chemical analyses, a great number of comparatively small liquid quantities or doses from different containers and transfer them into other containers when different liquids are concerned, or to take them up from one container and transfer them into other separate containers when only a single liquid is concerned.

The simplest liquid dosage device is thought to be the pipette, with the aid of which a liquid transfer operation can be individually repeated a sufficient number of times to transfer all the desired liquid quantities or doses.

Another fundamental liquid dosage device is the syringe, which comprises a cylinder and piston arranged so that when the piston is drawn inwardly an amount of liquid equivalent to one or several liquid doses is drawn into the cylinder. When the piston is returned stepwise to its initial position, one liquid dose can be directed into its particular container.

It has already been proposed to provide a sampling apparatus which comprises a plurality of pipettes and mechanical equipment necessary for their automatic operation. In this as well as other equivalent devices of prior art, in the measurement of liquids, separate pipette nozzles have been used, each associated with a respective

cylinder and piston syringe.

The dosage of liquids may be speeded up in practice by attaching together a number of the above-mentioned cylinder and piston syringes, each provided with 50 separate pipette-nozzles, to form a single entity which may, in a single operation, be exchanged for another similar entity when passing on to undertake dosage of a subsequent liquid or of a subsequent liquid 55 batch.

The present invention provides a device for use in apparatus for taking up and discharging multiple liquid doses and/or performing multiple sampling comprising a plurality of pipette nozzles connected in spaced relation to one another by permanently attached intermediate members to form an individually-handleable substantially rigid unitary structure in which the 65 nozzles are arrayed so that, as a unit they can be fitted to and detached from a corresponding array of spaced cylinders and piston syringes.

Contamination by liquid residues remaining in the nozzles is avoided if the device of the present invention is produced as an inexpensive discardable device which can be discarded after a single use.

The invention will be described further, 75 by way of example, with reference to the accompanying drawings which illustrate a preferred embodiment of the device which comprises fifteen of the nozzles arranged in a rectangular array comprising three 80 rows and five columns. In the drawings:—

Fig. 1 is an underneath plan of the said preferred embodiment; and

Fig. 2 is a section taken on the line II-II of Fig. 1

As shown in the drawings, a plurality 85 of pipette nozzles 10 are connected in spaced relation to one another by permanently attached intermediate members in the form of webs 14 to form a substantially rigid 90

unitary structure in which the nozzles are arrayed so that, as a unit, they can be fitted to and detached from a corresponding array of spaced cylinder and piston syringes 12.

5 The pistons of the syringes 12 have means (not shown) for actuating them to take up liquid into and discharge it from said nozzles. As shown, the webs 14 extend radially from the nozzles 10.

10 The device is extremely simple to use. The unitary structure of nozzles 10 and webs 14 is simply fitted on to and detached from the array of cylinder and piston syringes 12 and is then ready to take up

15 liquid into the nozzles and discharge it therefrom as soon as the actuating means for the pistons is brought into operation. After use the unitary structure may be discarded in its entirety. Use of the device

20 above described ensures that the cylinders and pistons need not become contaminated with the liquid being sampled. The unitary structure also ensures the distances between the pistons and the points of the nozzles

25 can be identical for all nozzles and this assists in obtaining identical sample volumes.

The material of the device can be freely chosen according to its particular application. The device can most readily be

30 made from moulded plastics material, but naturally other materials can be employed.

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WHAT WE CLAIM IS:—

35 1. A device for use in apparatus for taking up and discharging multiple liquid doses and/or performing multiple sampling

comprising a plurality of pipette nozzles connected in spaced relation to one another by permanently attached intermediate mem- 40 bers to form an individually-handleable substantially rigid unitary structure in which the nozzles are arrayed so that, as a unit they can be fitted to and detached from a corresponding array of spaced 45 cylinders and piston syringes.

2. A device as claimed in Claim 1 in which the intermediate members are webs radially extending from the nozzles.

3 A device as claimed in Claim 1 or 2 50 in which the pipette nozzles are arrayed in rows and columns.

4. A device in any preceding claim which is made of moulded plastics material.

5. A device for use in apparatus for 55 taking up and discharging multiple liquid doses and/or performing multiple sampling, substantially as hereinbefore described with reference to and as illustrated in the accom- 60 panying drawings.

6. A device in accordance with any preceding claim fitted to an array of cylinder and piston syringe parts and including means for actuating the pistons of said parts to take up liquid into and 65 discharge it from said nozzles.

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1 SHEET

COMPLETE SPECIFICATION

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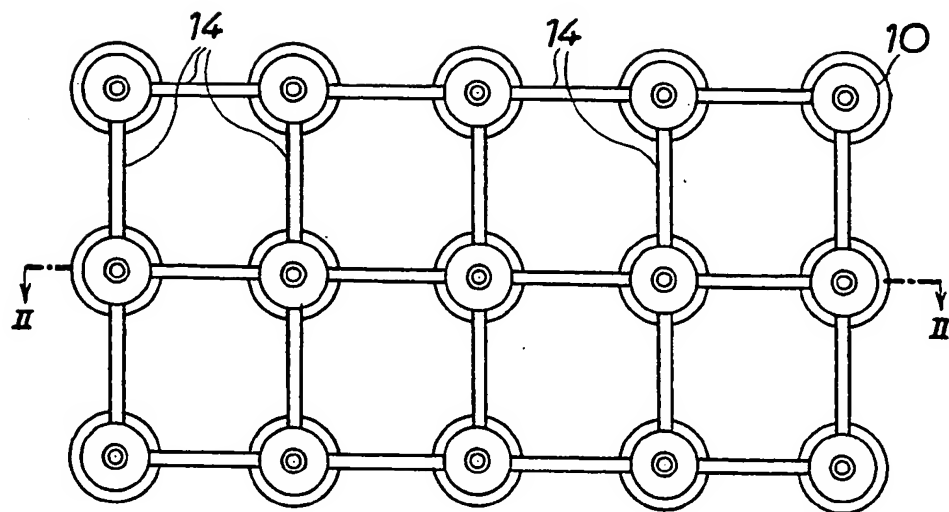


Fig. 1

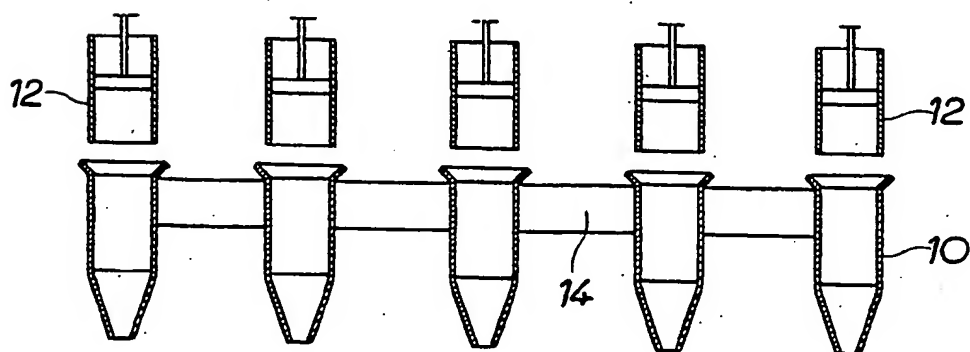


Fig. 2